

## CLAIMS

2     What is claimed is.

3     1.     A process for coloring thermoplastic olefin based resins comprising the steps of:

4             adding a suitable amount of liquid coloring compound to the thermoplastic olefin based resin  
5     at a rate sufficient to color the thermoplastic olefin based resin;

6             passing the mixture of liquid coloring compound and thermoplastic olefin based resin into  
7     a mill; and

8             pulverizing the mixture of liquid coloring compound and thermoplastic olefin based resin  
9     inside of the mill for a time sufficient to fuse said liquid coloring compound onto each particle of  
10    the thermoplastic olefin based resin.

11    2.     The process of claim 1 further comprising maintaining the temperature of the mixture inside  
12    of the mill at between 85°C and 125°C during the milling process.

13    3.     The process of claim 1 where the amount of coloring compound added to the thermoplastic  
14    olefin based resin is less than 1.0 % by weight.

15    4.     The process of claim 1 where the amount of coloring compound added to the thermoplastic  
16    olefin based resin is less than 0.2 % by weight.

17    5.     The process of claim 1 where the flow of liquid coloring compound onto the thermoplastic  
18    olefin based resin is at a constant rate.

- 1 6. The process of claim 1 further comprising pulverizing the thermoplastic olefin based resin  
2 to an average size of less than 600 microns.
- 3 7. The process of claim 1 further comprising the step of varying the mass flow rate of liquid  
4 coloring compound flow rate based on changes in the mass flow rate of thermoplastic olefin  
5 based resin entering said mill.
- 6 8. The process of claim 1, wherein said mill includes a rotating rotor coplanerally disposed  
7 within a stator having an annulus formed to radially circumscribe the outer circumference  
8 of said rotating rotor.
- 9 9. The process of claim 8 wherein said rotating rotor has a plurality of teeth on its outer radius.
- 10 10. The process of claim 8 wherein said stator has formed on its inner radius a plurality of teeth  
11 in cooperation with said plurality of teeth on said rotating rotor to form a gap between said  
12 teeth such that when a mixture of polymer pellets and liquid coloring compound passes  
13 through said gap the polymer pellets will be pulverized by the opposing action of said teeth  
14 into polymer powder particles and said liquid coloring compound is embedded onto the  
15 surface of the polymer powder particles thereby in a single step pulverizing said polymer  
16 pellets and producing polymer powder particles colored by said liquid coloring compound.